

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

PA990003
U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR
10/018839

INTERNATIONAL APPLICATION NO.
PCT/EP00/05450INTERNATIONAL FILING DATE
14 JUNE 2000 (14.06.00)PRIORITY DATE CLAIMED
19 JUNE 1999 (19.06.99)

TITLE OF INVENTION

DISPLAY APPARATUS COMPRISING A CATHODE RAY TUBE (CRT)

APPLICANT(S) FOR DO/EO/US

Yew Honn Cheong and Kyaw Nyunt Maung

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

- This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
- This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
- This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
- The US has been elected by the expiration of 19 months from the priority date (Article 31).
- A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - is attached hereto (required only if not communicated by the International Bureau).
 - has been communicated by the International Bureau.
 - is not required, as the application was filed in the United States Receiving Office (RO/US).
- An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - is attached hereto.
 - has been previously submitted under 35 U.S.C. 154(d)(4).
- Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - are attached hereto (required only if not communicated by the International Bureau).
 - have been communicated by the International Bureau.
 - have not been made; however, the time limit for making such amendments has NOT expired.
 - have not been made and will not be made.
- An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
- An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
- An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
- A copy of the International Preliminary Examination Report (PCT/IPEA/409).
- A copy of the International Search Report (PCT/ISA/210).

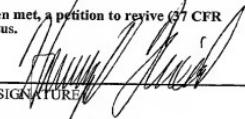
Items 13 to 20 below concern document(s) or information included:

- An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
- An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
- A **FIRST** preliminary amendment.
- A **SECOND** or **SUBSEQUENT** preliminary amendment.
- A substitute specification.
- A change of power of attorney and/or address letter.
- A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
- A second copy of the published international application under 35 U.S.C. 154(d)(4).
- A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
- Certificate of Mailing by Express Mail
- Other items or information:

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DATE OF DEPOSIT: DECEMBER 19, 2001

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 10/018839	INTERNATIONAL APPLICATION NO. PCT/EP00/05450	ATTORNEY'S DOCKET NUMBER PA990003
24. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :		CALCULATIONS PTO USE ONLY
<input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)		\$1040.00 \$890.00 \$740.00 \$710.00 \$100.00
ENTER APPROPRIATE BASIC FEE AMOUNT =		\$890.00
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (e)).		□ 20 □ 30 \$0.00
CLAIMS	NUMBER FILED	NUMBER EXTRA
Total claims	11 - 20 =	0
Independent claims	2 - 3 =	0
Multiple Dependent Claims (check if applicable).		□ \$0.00
TOTAL OF ABOVE CALCULATIONS =		\$890.00
Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.		□ \$0.00
SUBTOTAL =		\$890.00
Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)).		□ 20 □ 30 + \$0.00
TOTAL NATIONAL FEE =		\$890.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).		☒ \$40.00
TOTAL FEES ENCLOSED =		\$930.00
		Amount to be: refunded \$ charged \$
a. <input type="checkbox"/> A check in the amount of _____ to cover the above fees is enclosed.		
b. <input checked="" type="checkbox"/> Please charge my Deposit Account No. <u>07-0832</u> in the amount of <u>\$930.00</u> to cover the above fees. A duplicate copy of this sheet is enclosed.		
c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>07-0832</u> . A duplicate copy of this sheet is enclosed.		
d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.		
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.		
SEND ALL CORRESPONDENCE TO:		
Mr. Joseph S. Tripoli THOMSON multimedia Licensing Inc. Patent Department P. O. Box 5312 Princeton, New Jersey 08540 		
SIGNATURE <u>HARVEY D. FRIED</u> NAME <u>HARVEY D. FRIED</u> 28,298 REGISTRATION NUMBER DECEMBER 19, 2001 DATE		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Yew Honn Cheong et al.

Filed : June 14, 2000 - PCT National Phase of PCT/EP00/05450

For : DISPLAY APPARATUS COMPRISING A CATHODE RAY TUBE

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Sir:

In the US national phase application of PCT/EP00/05450
please enter the following amendments.

IN THE SPECIFICATION:

Please amend the specification as follows:

Page 1 after the title, insert the following:

--This application claims the benefit under 35 U.S.C. § 365 of
International Application PCT/EP00/05450, filed June 14, 2000, which
claims the benefit of Singapore Patent Application No. 9902050.7, filed
June 19, 1999.--

IN THE CLAIMS:

Please amend the claims as follows. This is the clean version.
Attached is the marked up version of these claims.

1. (Amended) Display apparatus comprising :

- a cathode ray tube,

- a first circuit providing a high voltage to the cathode and

- a second circuit receiving a gross signal on a source input and
providing on at least an output at least a luminance signal controlling an
electron stream of the cathode ray tube, wherein said

- means for simulating absence of gross signal when the apparatus switches from on to off.

2. (Amended) Display apparatus according to claim 1, wherein said means for simulating absence of gross signal are triggered by a signal sent by a microprocessor.

3. (Amended) Display apparatus according to claim 1, wherein a pin carrying a signal representative of the gross signal when the apparatus is on is connected to ground when the apparatus switches from on to off.

4. (Amended) Display apparatus according to claim 1, wherein the second circuit comprises a comparator having an input connected to said source input and generating an error signal according to a difference between said comparator input and a reference signal, and controlled amplifying means for amplifying the gross signal into the luminance signal according to the error signal, and wherein a signal simulating absence of gross signal is sent to the comparator input when the apparatus switches from on to off.

5. (Amended) Display apparatus according to claim 4, wherein said signal simulating absence of gross signal is controlled by a signal sent by a microprocessor.

6. (Amended) Display apparatus according to claim 4, wherein the comparator input is connected to ground when the apparatus switches from on to off.

7. (Amended) Display apparatus according to claim 4, wherein the comparator input is connected to ground through a switch.

8. (Amended) Display apparatus according to claim 7, wherein the switch is controlled by a signal from a microprocessor.

9. (Amended) Display apparatus according to claim 1, wherein the apparatus is a television receiver.

10. (Amended) Display apparatus comprising :

- a cathode ray tube,
- a first circuit providing a high voltage to the cathode and
- a second circuit receiving a gross signal on a source input and

providing on at least an output at least a luminance signal controlling an electron stream of the cathode ray tube,

the second circuit comprising a comparator having an input connected to said source input and generating an error signal according to a difference between said comparator input and a reference signal, and controlled amplifying means for amplifying the gross signal into the luminance signal according to the error signal,

wherein the comparator input is connected to ground through a switch controlled by a signal generated from a microprocessor when the apparatus switches from on to off.

11. Display apparatus according to claim 10, the apparatus being a television receiver.

IN THE ABSTRACT:

Please add the attached Abstract.

REMARKS

The specification has been amended to include a reference to the priority application.

The above amendments to the claims have been made to eliminate reference indicia and to meet the requirements of the USPTO.

To meet the requirements of the United States, the Abstract has been added.

No fee is believed to have been incurred by virtue of this amendment. However, if a fee is incurred on the basis of this amendment, please charge such fee against deposit account 07-0832.

Respectfully submitted,
Yew Honn Cheong et al.



Harvey D. Fried, Attorney
Registration No. 28,298
609/734-9839

Enclosures

THOMSON multimedia Licensing Inc.
Patent Operation
PO Box 5312, Princeton, NJ 08543-5312

Date: December 19, 2001

TURBINE - 5555555555555555

MARKED UP CLAIMS

1. (Amended) Display apparatus comprising :

- a cathode ray tube [(3)],

- a first circuit [(1)] providing a high voltage [(HV)] to the cathode and

and providing on at least an output at least a luminance signal [(Y)] controlling an electron stream of the cathode ray tube [(3)], [characterised by] wherein said

- means for simulating absence of gross signal [(Y')] when the

apparatus switches from on to off.

2. (Amended) Display apparatus according to claim 1, wherein said means for simulating absence of gross signal [(Y')] are triggered by a signal [(SH)] sent by a microprocessor.

3. (Amended) Display apparatus according to claim 1 [or 2], wherein a pin [(42)] carrying a signal representative of the gross signal [(Y')] when the apparatus is on is connected to ground when the apparatus switches from on to off.

4. (Amended) Display apparatus according to claim 1, wherein the second circuit [(2)] comprises a comparator [(20)] having an input [(42)] connected to said source input and generating an error signal [(E)] according to a difference between said comparator input and a reference signal [(V₀)], and controlled amplifying means [(22)] for amplifying the gross signal [(Y')] into the luminance signal [(Y)] according to the error signal [(E)], and wherein a signal simulating absence of gross signal [(Y')] is sent to the comparator input [(42)] when the apparatus switches from on to off.

5 5. (Amended) Display apparatus according to claim 4, wherein said signal simulating absence of gross signal [(Y')] is controlled by a signal [(SH)] sent by a microprocessor.

5 6. (Amended) Display apparatus according to claim 4 [or 5], wherein the comparator input [(42)] is connected to ground when the apparatus switches from on to off.

10 7. (Amended) Display apparatus according to claim 4, wherein the comparator input [(42)] is connected to ground through a switch [(K)].

15 8. (Amended) Display apparatus according to claim 7, wherein the switch [(K)] is controlled by a signal [(SH)] from a microprocessor.

20 9. (Amended) Display apparatus according to [any of the preceding claims] claim 1, wherein the apparatus is a television receiver.

25 10. (Amended) Display apparatus comprising :

- a cathode ray tube [(3)],

- a first circuit [(1)] providing a high voltage [(HV)] to the cathode and

30 - a second circuit [(2)] receiving a gross signal [(Y')] on a source input and providing on at least an output at least a luminance signal [(Y)] controlling an electron stream of the cathode ray tube [(3)],

the second circuit [(2)] comprising a comparator [(20)] having an input

25 [(42)] connected to said source input and generating an error signal [(E)] according to a difference between said comparator input and a reference signal [(Vo)], and controlled amplifying means [(22)] for amplifying the gross signal [(Y')] into the luminance signal [(Y)] according to the error signal [(E)],

30 [characterised in that] wherein the comparator input [(42)] is connected to ground through a switch [(K)] controlled by a signal [(SH)] generated from a microprocessor when the apparatus switches from on to off.

11. Display apparatus according to claim 10, the apparatus being a television receiver.

ABSTRACT

A display apparatus, for instance a television receiver, comprises a cathode ray tube, a first circuit for providing a high voltage to the cathode and a second circuit receiving a gross signal and providing on at least an output at least a luminance signal controlling an electron stream of the cathode ray tube. To reduce stray emission, absence of gross signal is simulated when the apparatus is switched from on to off.

Display apparatus comprising a cathode ray tube (CRT)

The invention relates to a display apparatus comprising a cathode ray tube (CRT).

5 In such an apparatus, stray emission may take place once the apparatus is switched off (or to standby) due to high voltages lingering in the CRT. This problem is conventionally addressed by reducing the voltages in the CRT when the apparatus is turned off. Various solutions are described in the patent application published as EP 0 810 785.

10 According to another solution, disclosed in the patent application published as JP 62-92 584, the black level adjustment voltage for a luminance signal sent to the CRT rises when the conventional B+ voltage falls.

15 The goal of the invention is to improve the reduction of stray emission by discharging the cathode thanks to a new solution which can be used in addition to the preceding ones.

According to this new solution, a display apparatus comprises a cathode ray tube, a first circuit providing a high voltage to the cathode, a second circuit receiving a gross signal on a source input and providing on at least an output at least a luminance signal controlling an electron stream of the cathode ray tube, and means for simulating absence of gross signal when the apparatus switches from on to off.

According to preferred embodiments,

25 - said means for simulating absence of gross signal are triggered by a signal sent by a microprocessor ;

- a pin carrying a signal representative of the gross signal when the apparatus is on is connected to ground when the apparatus switches from on to off ;

30 - the second circuit comprises a comparator having an input connected to said source input and generating an error signal according to a difference between said comparator input and a reference signal, and controlled amplifying means for amplifying the gross signal into the luminance signal according to the error signal, and a signal simulating absence of gross signal is sent to the comparator input when the apparatus switches from on to off ;

35 - said signal simulating absence of gross signal is controlled by a signal sent by a microprocessor ;

- the comparator input is connected to ground when the apparatus switches from on to off ;

- the comparator input is connected to ground through a switch ;

- the switch is controlled by a signal from a microprocessor.

Accordind to this solution, a display apparatus is provided, which comprises a cathode ray tube, a first circuit providing a high voltage to the cathode and a second circuit receiving a gross signal on a source input and providing on at least an output at least a luminance signal controlling an electron stream of the cathode ray tube, the second circuit comprising a

comparator having an input connected to said source input and generating an error signal according to a difference between said comparator input and a reference signal, and controlled amplifying means for amplifying the gross signal into the luminance signal according to the error signal, wherein the comparator input is connected to ground through a switch controlled by a

signal generated from a microprocessor when the apparatus switches from on to off.

The display apparatus is for instance a television receiver.

The invention will now be explained in the light of the attached drawings and more specifically :

- figure 1 schematically representing an embodiment of the invention ;

- figure 2 representing a practical implementation of this embodiment ;

- figure 3 representing a detailed view of a circuit of figure 3.

As schematically shown in figure 1, a television receiver includes a cathode ray tube 3, a first circuit 1 for providing a high voltage HV to the cathode of the CRT 3 and a second circuit 2 for providing a luminance signal Y controlling the electron stream of the CRT 3. An amplifier 4 can be provided between the second circuit 2 and the CRT 3 to input a signal with a sufficient power to the CRT.

On colour television receivers (usually called CTV), three circuits similar to the second circuit 2 are provided respectively for red, green and blue parts of the image. The description below will only mention one circuit 2 but it should be understood that the invention can apply to any of the three circuit 2, and possibly to several at the same time.

The second circuit 2 processes the gross signal Y' from a video source, e.g. a tuner or a VCR, into the luminance signal Y . The second circuit 2 notably provides a brightness setting as follows.

During the horizontal blanking interval, reference signals (usually

- 5 2 reference signals) are transmitted to adjust the pedestal level and the brightness so that the luminance of the following horizontal line is displayed with the correct intensity.

Therefore the second circuit 2 includes a comparator 20 comparing the gross signal Y' (on a comparator input 42) to a reference signal V_0 during horizontal blanking intervals. If the gross signal Y' is not strong enough (that is the references transmitted during the horizontal blanking interval reveal a low signal), then the comparator generates an error signal E proportional to the need of amplifying the gross signal Y' to obtain the luminance signal Y . An amplifier 22 controlled by the error signal E amplifies the gross signal Y' into the luminance signal Y accordingly.

When the television receiver is switched off, a signal SH is sent by a microprocessor of the receiver for contacting a switch K connected between the comparator input and the ground. The comparator input is then connected to the ground, thus simulating an absence of gross signal Y' . As a consequence, there is a boost in the error signal E , thus in the amplification by amplifier 22 and in the end in the luminance signal Y .

This boost in the luminance signal Y discharges the cathode of the CRT 3 whereto no more energy is supplied.

A practical way to implement this embodiment is described thereafter in relation to figure 2 and figure 3.

A video processor IC 5 is used for video signal processing. In the example, the video processor IC 5 is a TA1268N from Toshiba. The video IC 5 includes brightness setting means as described above, including notably a comparator whose input is represented under reference 42 (corresponding to pin 42 of TA1268N).

A resistor R ($75\text{ k}\Omega$) and a capacitor C ($1\text{ }\mu\text{F}$) are connected in series (RC-circuit) and are interposed between the comparator input 42 and the ground. This RC-circuit provides averaging of the gross signal in order to obtain the signal to be compared to the reference signal for brightness setting purposes.

In parallel to the RC circuit, the comparator input 42 is connected to the ground through the emitter-transmitter path of a transistor K . The base

of the transistor K is connected through a voltage divider 6 to a wire 7 providing the SH signal from the microprocessor of the receiver when the receiver is switched from on to off (or standby).

A detailed view of the part of the video processor IC 5 related to the invention is represented on figure 3. The video IC 5 includes a black stretching element 23, a brightness setting circuit 8 and a pedestal clamping circuit 9.

The clamping circuit 9 comprises a comparator 24 comparing the pedestal level of the gross signal Y' during the horizontal blanking time dedicated to the pedestal reference (that is when clamping switch 25 is closed) with a reference voltage V_0 . The gross signal is corrected accordingly thanks to subtractor 26.

The brightness setting circuit includes previously described comparator 20 and controlled amplifying means 22. A brightness switch 21 links the output of comparator 20 (carrying error signal E) to the control pin of amplifying means 22 ; the brightness switch is closed only during horizontal blanking intervals, where the reference signals are received. An isolation resistor 27 is interposed between the input of comparator 20 and the wire 10 carrying the luminance signal.

CLAIMS

1. Display apparatus comprising :

5 - a cathode ray tube (3),

- a first circuit (1) providing a high voltage (HV) to the cathode and

- a second circuit (2) receiving a gross signal (Y') on a source input and providing on at least an output at least a luminance signal (Y) controlling an electron stream of the cathode ray tube (3),

10 characterised by

- means for simulating absence of gross signal (Y') when the apparatus switches from on to off.

2. Display apparatus according to claim 1, wherein said means for

15 simulating absence of gross signal (Y') are triggered by a signal (SH) sent by a microprocessor.

3. Display apparatus according to claim 1 or 2, wherein a pin (42)

20 carrying a signal representative of the gross signal (Y') when the apparatus is on is connected to ground when the apparatus switches from on to off.

4. Display apparatus according to claim 1, wherein the second

25 circuit (2) comprises a comparator (20) having an input (42) connected to said source input and generating an error signal (E) according to a difference

between said comparator input and a reference signal (V_o), and controlled amplifying means (22) for amplifying the gross signal (Y') into the luminance signal (Y) according to the error signal (E), and wherein a signal simulating absence of gross signal (Y') is sent to the comparator input (42) when the apparatus switches from on to off.

30 5. Display apparatus according to claim 4, wherein said signal

simulating absence of gross signal (Y') is controlled by a signal (SH) sent by a microprocessor.

35 6. Display apparatus according to claim 4 or 5, wherein the

comparator input (42) is connected to ground when the apparatus switches from on to off.

7. Display apparatus according to claim 4, wherein the comparator input (42) is connected to ground through a switch (K).

5 8. Display apparatus according to claim 7, wherein the switch (K) is controlled by a signal (SH) from a microprocessor.

9. Display apparatus according to any of the preceding claims, wherein the apparatus is a television receiver.

10

10. Display apparatus comprising :

- a cathode ray tube (3),

- a first circuit (1) providing a high voltage (HV) to the cathode and

- a second circuit (2) receiving a gross signal ('Y') on a source

15 input and providing on at least an output at least a luminance signal (Y) controlling an electron stream of the cathode ray tube (3),

the second circuit (2) comprising a comparator (20) having an input (42) connected to said source input and generating an error signal (E) according to a difference between said comparator input and a reference signal (V_0), and controlled amplifying means (22) for amplifying the gross signal ('Y') into the luminance signal (Y) according to the error signal (E),

20 characterised in that the comparator input (42) is connected to ground through a switch (K) controlled by a signal (SH) generated from a microprocessor when the apparatus switches from on to off.

25

11. Display apparatus according to claim 10, the apparatus being a television receiver.

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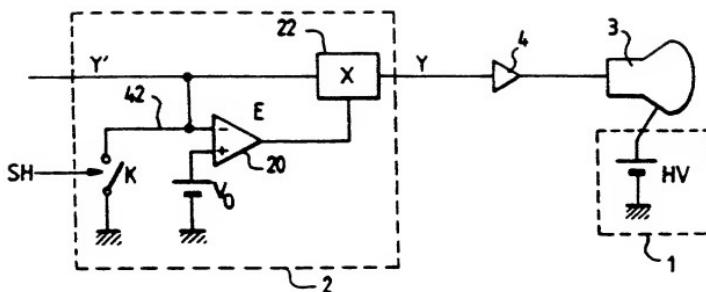


FIG.1

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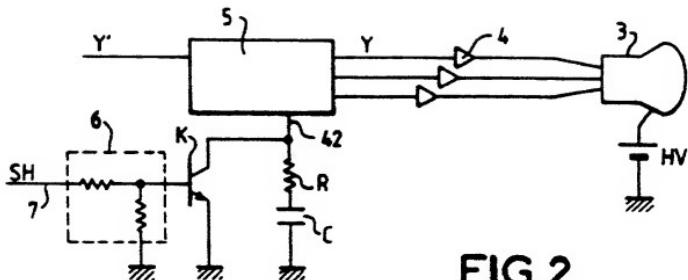


FIG. 2

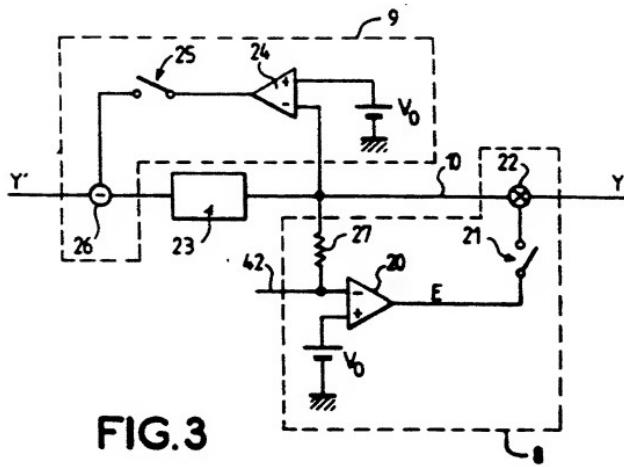


FIG. 3

**DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS**

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Display apparatus comprising a cathode ray tube (CRT)

the specification of which

(CHECK ONE) is attached hereto.
 was filed on June 14, 2000, Application Serial. No.PCT/EP00/05450
 and was amended on .

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent, utility model, design or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
Number	Country	Date Filed	Yes	No
9902959-7	SG	June 19, 1999	xx	

I hereby claim the benefit under 35 USC 120 of any US Application(s) listed below, and insofar as the subject matter of each of the claims of this Application is not disclosed in the prior US application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

Serial No.: _____ Filed: _____

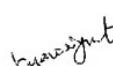
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under of 18 USC 1001 and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Joseph S. Tripoli (Reg. No. 26,040), Dennis H. Irbeck (Reg. No. 26,372), Eric Herrmann (Reg. No. 29,169) and Joseph J. Laks (Reg. No. 27,914) Telephone: (609) 734-9813.

Address all correspondence to Joseph S. Tripoli, Patent Operations - Thomson multimedia Licensing, Inc. - CN 5312 - Princeton, New Jersey 08543-0028.

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 Sole or First Joint Inventor: Kyaw Nyunt Maung
 Citizenship: MM
 Residence and Post Office Address: 146 Bulit Batok West Ave 6

- 2 -

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